Professional fossil preparators at the British Museum (Natural History), 1843-1990*

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ABSTRACT

Since the inception of the British Museum (Natural History) in 1881 (now the Natural History Museum), the collection, development and mounting of fossils for scientific study and public exhibition have been undertaken by fossil preparators. Originally known as masons, because of their rock-working skills, their roles expanded in the late nineteenth and early twentieth centuries, when, at the forefront of the developing science of palaeontology, the Museum was actively obtaining fossil material from the UK and abroad to build the collections. As greater numbers of more impressive specimens were put on public display, these preparators developed new and better methods to recover and transport fossils from the field, and technical improvements, in the form of powered tools, enabled more detailed mechanical preparation to be undertaken. A recurring theme in the history of palaeontological preparation has been that sons often followed in their fathers' footsteps in earth sciences. William and Thomas Davies, Caleb and Frank Barlow, and Louis and Robert Parsons were all father- and -son geologists and preparators.

KEYWORDS: palaeontology-palaeontological preparation – specimen collecting – restoration – field techniques.

INTRODUCTION

This paper was inspired by the skills and knowledge of past workers in the field of fossil preparation, both at the Natural History Museum, London (hereafter NHM), and elsewhere. One such, the late Peter Whybrow (1942-2004), was a very talented preparator who undertoook pioneering work on *Archaeopteryx lithographica* (Whybrow 1982). He first worked at the NHM in 1960 and became the Chief Preparator at Yale University's Peabody Museum from 1968 until 1972, before returning to London. He was Head of the Palaeontology Laboratory at the NHM from 1981 until 1990.Whybrow (1985) published a paper entitled "A history of Fossil Collecting and Preparation Techniques" in which, among many references to the likes of Darwin, Huxley, Owen, Cuvier, de la Beche and other luminaries, he also made reference to two rather less famous characters, "William Davies of the British Museum" and "Mr Barlow, the Mason attached to the Geological Department". These contemporaries, who were both active in the 1860s, were involved in the recovery and preparation of some magnificent fossils. Whybrow's (1985) reference to their activities, and the author's own work on several historic fossil specimens, prompted research in the museum's archives and elsewhere, to discover what is known of these and other early UK preparation pioneers.

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Although Robert John Parsons (born 1930) worked at the museum rather too late (from 1945) to be considered an early contributor, he is also included here for completeness of the 'familial theme' that pervades the early days of palaeontological preparation at the museum. This paper attempts to bring together, in a historical context, some of the highlights of their collective works in palaeontology, fossil preparation, geology and mineralogy, but does not cover either the contributions of other masons, for whom scant or no museum records exist, nor those of later, notable innovators, such as Arthur Rixon (1913-1983) and Harry Toombs (1909-1987), whose careers overlapped those of both Frank Barlow (1880-1951) and the Parsons family. A timeline of the various staff referred to here (Figure 1) provides an indication of who overlapped with whom and who may have been providing training to others.

FROM THE BRITISH MUSEUM TO THE NATURAL HISTORY MUSEUM

The institution in London now known as Natural History Museum has a rich and fascinating history of its own,[1] with origins that can be traced back to 1753 and the death of the wealthy physician Sir Hans Sloane (1650-1753), an avid collector of natural history specimens. Sloane's will enabled his remarkable collection (in excess of 71,000 items) to be purchased for the nation for £20,000, which was significantly lower than its estimated worth. Parliament not only enabled the purchase but also financed the construction of a "British Museum" (BM) in Bloomsbury to display it to the public.

In 1856, Sir Richard Owen (1804-1892)took charge of the BM's natural historydepartments and convinced the Board of Trustees that a dedicated building was needed to house the large and growing collections. The Department of Mineralogy was separated from that of Geology in 1858. The Natural History collections of the British Museum were removed to South Kensington and, in 1881, the British Museum (Natural History), abbreviated BM(NH)) opened, with free admission, to the public. The BM(NH) officially remained part of the British Museum until 1963, when it became established as an independent institution in its own right, and was renamed the Natural History Museum in 1992. The Department of Geology,in the meantime, was renamed the Department of Palaeontology in 1956. The palaeontological collections were re-housed in a newly built extension to the east side of the main museum in 1977. Nine years later, the BM(NH) absorbed the adjacent Geological Museum of the British Geological Survey and incorporated its collection of more than 30,000 specimens on long-term loan.

What is now the Natural History Museum at Tring in Hertfordshire (between London and Oxford) was built in 1889 to house the unique zoological collections of Walter Rothschild (1868-1937), who opened his private museum to the public in 1892. Following Rothschild's death, the building and collections were gifted to the nation and became a satellite museum of the BM(NH).

THE FAMILY TEAMS

William Davies, (1814-1891 (Figure2) joined the Geological Department of the British Museum in 1843 and the Geological Survey in 1846, as a fossil collector. He was awarded the inaugural Murchison Medal by the Geological Society of London in 1873 and made an assistant at the BM in 1875, becoming responsible for the entire fossil collection. He became a Fellow of the Geological Society two years later. Davies developed and applied a field jacketing technique (described below) that was to become adopted as standard practice, and worked closely with the mason (that is, the preparator) on the material he collected.

In 1863, Davies was sent to collect Pleistocene mammal fossils from Ilford, Essex. During these excavations, he jacketed a large mammoth skull in plaster and burlap, and reinforced the plaster with iron bars – a technique that was to be adopted worldwide for securing larger and heavier specimens from the field. A detailed account of the recovery of this specimen (which was to become known as "the Ilford Mammoth") was published by Henry Woodward (1865:93):

We sent down a one-horse spring-van, carrying a good supply of the best plaster of Paris (1 cwt.), six pieces of ½ - inch nail-bar-iron, 6 to 8 ft.long, a bundle of splines, a box full of hay and tow, some strips of old canvas, whitey-brown paper, two large earthen pans in which to mix the plaster, spades, trowels, a saw, iron hammers. Spatula,&c., good stout cord and rope, deal planks, and a hand-barrow upon which to remove the remains, and some large wooden trays in which all the loose portions were to be systematically placed, and marked with pencil on separate papers to show the parts to which they belonged.

Another, and arguably even more significant recovery, made by Davies in 1874, was that of six large septarian nodules, found at the Swindon Brick & Tile Company's pit "situated at the foot of Old Swindon Hill and adjoining the Wilts and Berks Canal" in Wiltshire (Davis 1876:194). The great jumble of bones contained in the largest nodule that he collected turned out to be a pelvis, vertebrae and right femur of a large stegosaurian dinosaur, now called *Dacentrurus* (but originally named *Omosaurus* by Sir Richard Owen). Attempts to lift the nodules in one piece failed, and the resulting chunks of "stone, clay, plaster and bones weighing nearly 3 tons [3,048 kilograms]" were packed in many cases and transported back to the Museum, where Caleb Barlow undertook the slow and exacting process of reconstruction and preparation.

In a vivid account of the recovery and preparation of the *Omosaurus* material, Davies (1876:195) wrote that "[e]very block when first lifted from the clay broke into many pieces, and every subsequent removal, in their transit from the pit to their final deposition in the National Collection added greatly to their number". Once delivered to the workshop of the Department of Geology and into Barlow's care, Davies notes that "the work of reconstruction was at once commenced; the bones imbedded in the clay were divested of their plaster casing, gelatinized and mended, for they were much decayed and broken". And, in a sad refrain that still echoes true today goes on to observe) that

had some competent person been present at the moment of its first discovery, a much larger portion of the skeleton would have been secured; for undoubtedly many a fine fossil is lost to science through the general ignorance and carelessness of the workmen, and the strong propensity on the part of the public to carry off portions of any curiosity for the mantel-shelf!.

Davis was promoted, in 1880, to Assistant first class. In his diary entry for 1 October 1880[2,] he recorded that he "commenced duty at the new museum Kensington" and was engaged in "unpacking fossils selected for description by prof. Owen". On 16 October, he completed the packing and removal of the fossils from Bloomsbury to South Kensington.

He seems to have been well connected to fossil collectors and dealers. In a letter of 7 September 1880 to Henry Woodward,[3] he wrote of having received details from "Mr Damon" (of R. F. Damon & Co., fossil dealers and makers of anthropological and other casts of Weymouth, Dorset) regarding a specimen referred to as the "Bridport saurian" and said that "it will now be necessary to write asking him to name his lowest price or to make him a direct offer".

Thomas Davies (1837-1892), William's son (Figure 3), was an assistant in the Department of Mineralogy of the British Museum from 1858 to 1892, and was elected a Fellow of the Geological Society in 1870. He became an excellent mineralogist, acquiring a remarkable knowledge of characters distinctive of localities, as well as conducting admirable work in the microscopic investigation of rocks and editing the *Mineralogical Magazine*. His obituary published by the Mineralogical Society (Fletcher 1893) painted a wonderful picture of his professional and private life:

His early education was of a very elementary character, and the period of his school-life was brief: finding town life irksome, and yearning for freedom and adventure, he took to the sea at the age of 14, and during the next four years led a roving life, visiting China, India, and various parts of South America. He was then prevailed upon by his father to adopt a more settled mode of existence, and on the separation of the Department of Mineralogy from that of geology, was appointed in 1858 a third class attendant at the British Museum under professor Maskelyne.

During the next nine years (1858-1867), a major project to re-arrange, examine, clean and label the minerals collection was undertaken, involving literally tons of specimens. According to Fletcher's obituary:

"[T]he patient and intelligent aid of 'young Davies' alone rendered it possible to carry out the preliminary operations", and thus Davies acquired an "eye-knowledge of minerals, rarely if ever surpassed".

Thomas Davies became expert in the microscopic characters of rock forming minerals, utilizing the then new technique of thin sectioning. He also studied at evening classes. He was familiar with plants and fossils, a knowledge passed on to him by his father, and, in 1862, he gained promotion to Transcriber or Junior Assistant. This was followed by promotion to Assistant First Class in 1880. As noted in Fletcher's obituary, "by a remarkable coincidence, his father, William Davies, obtained the same promotion on the same day". In the same year he was awarded the Balance of the Proceeds of the Wollaston Fund by the Council of the Geological Society "as a testimony of the value of his researches in Mineralogy and Lithology" (Fletcher, 1893:163). In 1889, a new mineral, Daviesite, was named in his honour, recognizing his significant contributions to the field. Three years later, following his death (just one year after that of his father), Fletcher (1893) recorded personal tributes to his good nature:

He was a most excellent colleague, always cheerful, good tempered, and kind hearted, ever ready to help in any direction, however much it might interfere with the particular work he had immediately in hand, ever willing to learn, for any question that other side of which the possible existence might not have suggested itself to him. At home he was an enthusiastic gardener: wet or fine, absolutely reckless of weather, he was at work from early sunrise, and could boast the possession of one of the best managed gardens in the neighbourhood. His love of fresh air and the bustling east wind never left him: even after recovery from the long illness which two years ago had taken him to the verge of grave, and from which he never fully recovered, he did not hesitate to show his former contempt for the protection of an umbrella, and notwithstanding the remonstrances of his friends might occasionally be seen still enjoying the beating of the wind and rain on his unprotected face.

Caleb Barlow (1840- 1908) (Figure 4) was the mason (preparator) appointed by Sir Richard Owen, and he worked at the Museum from 1874 to1908. He is the first recorded person to have been engaged in professional fossil preparation at the museum ,and was employed on an annual salary of £101. 14s 6d. Five other masons were employed in the BM's Department of Antiquities, where "presumably they conserved rather than created" (Whybrow, 1985:21).

In 1865, the Reverend William D. Fox (1813-1881) found the remains of the armoured dinosaur *Polacanthus* on the Isle of Wight. John W. Hulke (1881:657) later described the specimen and, referring to the condition of its dermal armour, noted that: "It is now I fear irreparably damaged and beyond reconstruction. Broken up into countless pieces through hasty and incautious removal from the cliffs, these have in 15 years cracked and fallen into numberless smaller fragments; the attempt to rejoin which would be a hopeless undertaking".

The specimen was entrusted into the care of Richard Hall (Figure 4),[4] an assistant mason, and Caleb Barlow, who between 1881 and 1887 set about the "hopeless undertaking"of re-assembling the shattered pieces. As a result of their skill and patience, Hulke (1887:169) was able to publish an update to his earlier description:

[T]he great dorsal shield... was represented by several hundred disconnected pieces, many of these being of less size than one cubic inch. It was also evident that many had been lost. In this mutilated condition the reconstruction of the shield appeared hopeless, but at length, under the guidance of the heads of the Palaeontological Department, this has been accomplished by Mr. Hall and Mr. Barlow ("Masons"), who brought to the task a painstaking perseverance and skill worthy of the highest praise.

Caleb Barlow's services had been needed earlier, in 1876, when the *Omosaurus* material recovered by Davies required preparation. As with *Polacanthus*, it had been very badly shattered during extraction and transport. Davies (1876:196) noted that:

This was a work of much labour, patience and skill, for the matrix was hard and adhered firmly to the bone, which, being much softer, rendered it almost impossible to remove the former, without also taking away the surface of the latter. However, slowly but satisfactorily the work progressed, and bone after bone was brought to light, until a grand group, comprising the iliac bones of either side with the sacrum entire and retaining their normal form and position, an ischium, femur, dorsal, and caudal vertebrae, were projected on bold relief from a background of grey stone: forming a magnificent fossil group unique of its kind.This work was skilfully executed by Mr.Barlow, the Mason attached to the Geological Department, and occupied him several months. But happily the labour has added much to palaeontological knowledge… and the results have been a source of gratification to those who took part in its reconstruction

Barlow was engaged in moulding and casting through his work with R.F. Damon & Co.,supplying the BM on a commercial basis. He was also in contact, on behalf of the museum, with Lord Walter Rothschild, and spent time visiting and appraising Rothschild's collections at Tring.

A letter to Rothschild's scientific assistant Ernst Hartert (1859-1933) from Caleb Barlow's son dated 11 June 1908[5] recorded that his father died as a result of "weakness & heart failure following a severe operation for gall stones" .

Frank Oswell Barlow (1880-1951) (Figure 4) commenced as an unpaid apprentice in the Department of Geology in 1896, aged 15. In 1899, he became a workshop attendant and progressed to Mason in 1908, re-titled as preparator in 1921.

During 1903 and 1904, he spent several months in Fayum, Egypt, excavating Cenozoic vertebrates with Charles WilliamAndrews FRS (1866-1924),and afterwards made restorations of the most important finds, such as *Arsinoitherium* and various extinct proboscideans. He also worked on the collection of Sir Arthur Smith Woodward (1864-1944) of Pliocene mammal remains from Pikermi, Greece, and many other famous specimens. He was responsible for the casts of the leather back Sea Turtle (*Dermochelys coriacea*) and the deep sea anglerfish *Ceratias* in the Department of Zoology. The younger Barlow also modelled Smith Woodward's restorations of the Piltdown skull.

In 1916, Frank Barlow commenced work further preparing an *Archaeopteryx* fossil, exposing the pubes and right coracoid when, " [i]n order to expose the coracoid from below he cut a window in the back of slab sometime before 1921" (Cornish et al, 2010: 143). This was a delicate undertaking on the museum's most valuable specimen, and his having been entrusted with the task was testament to his considerable skill and abilities. During the First World War, he served as a Section Commander in the Royal Tank Corp and was stationed in France.[6]

He went on to become Technical Assistant first class in 1929, and Technical Assistant higher grade in 1930, retiring from the museum in 1941. His last major work at the museum was to carry out the difficult task, over several years, of reconstructing in plaster –of- Paris, the skull of the Triassic amphibian *Paracyclotosaurus* from cavities within the ironstone nodules which had contained the fossil. The reconstructed cast of the skull, lower jaws and post-cranial skeleton were on display for many years, but were removed in 2017 as part of the major overhaul of the exhibits in what is now Hintze Hall. David Meredith Seares Watson (1886-1973), the former Jodrell Professor of Zoology and Comparartive Anatomy, University College London, recognized Barlow's skill and patience in his publication on *Paracyclotosaurus,* writing that "Barlow's work covered many years, and I do not know of any other man who could have done it; it was a technical triumph" (Watson1958:236). "The development of the specimen, so skilfully carried out by the late Mr. F.O.Barlow, required many years of patient work using laborious methods then available, and the intervention of two wars much increased the delay in finishing the task of preparation"(Watson 1958:261).

Later in his career, Frank Barlow also became the proprietor of R.F. Damon & Co. (the company for which his father had once worked in his spare time), and which he developed on the anthropological side, supplying scientific institutions worldwide. He became well known for his casts and restorations of fossil human skulls. Following his death in 1951, his stock of moulds was taken over by the Wenner-Gren Foundation in order that his work might be continued.

In his obituary in *Nature* , Wilfred Edwards (1951) wrote that Frank Barlow had worked "with great distinction for 45 years":

Mr Barlow will be remembered by all who knew him for his personality, his massively imposing figure, resonant voice and courteous approach. He was a man of wide culture, as his conversation revealed. He had an extensive knowledge of literature and, like his father, he was musical. His rich bass voice was for many years heard in male voice choirs, and he sang at coronations and other special occasions in Westminster Abbey. He spent his last decade in the pleasant half-timbered Old Parsonage at Merston near Chichester.

The following observation was removed from an earlier draft of the obituary: "Barlow was sometimes mistaken for the Director of the Museum or, with even greater probability, for one of the Principal trustees." [7]

Louis Emmanuel Parsons (1889-1964) won a scholarship to attend the Westminster Art School in London, where he studied drawing and sculpture. During this time, he also made a study of comparative anatomy and geology, and was sent to work, on the recommendation of the Keeper of Geology, for four years (1905-1908) at Messrs W. Cubitt & Co., a supplier to the geological community. There he gained knowledge of the cutting and handling of different kinds of rocks. He was employed in the Department of Geology in 1908 when aged 19 at a weekly wage of 25 shillings, rising (on recommendation) by 1 shilling a week annually to 30 shillings a week. Promoted to preparator, retiring in 1954. He is credited with having first introduced the pneumatic hammer (air scribe) to the palaeontology workshop sometime after 1911, which was when the museum was connected to electricity. Like his contemporary and colleague Frank Barlow, Parsons served in the Royal Tank Corp during the First World War (1915-1919), stationed in France.[6]

Of the early preparators, Louis Parsons had perhaps the most illustrious career, and the specimens that he worked on included some of the most recognizable in the Museum collections. He worked on *Archaeopteryx,* and developed and mounted a host of fossil birds, reptiles and mammals,including the large bird *Diatryma,* the giant marine turtle *Protostega,* the marine crocodile *Steneosaurus* and the plesiosaur *Macroplata tenuiceps.* He also restored and mounted one of the finest known skeletons of the ichthyosaur *Ophthalmosaurus* (until recently on public display),for which he was specially commended by the palaeontologist Charles Andrews, author of *A Descriptive Catalogue of the Marine Reptiles of the Oxford Clay* (1910).[8] His work with dinosaurs included mounting the skeleton of *Mantellisaurus atherfeldensis* (currently displayed in Hintze Hall), the pelvic girdle of the gigantic iguanodontid *Barilium dawsoni*, and two skeletons of *Hypsilophodon foxii* (which were both displayed in the Dinosaur Gallery until their removal in 2016). Undoubtedly however, his greatest challenge insofar as dinosaur preparation was concerned, was that presented by the massive ankylosaur *Scolosaurus.* Sometime in 1915, before the commencement of his military service, the museum took delivery of several blocks of sandstone containing the skeleton, which had been collected the previous year from Alberta, Canada by William Cutler (1878-1925). According to an account by Swinton (1929:67):

"Mr L. E. Parsons, one of the geological preparators, had time only to unpack and look over the specimen before leaving the museum on military service, and it was not until he returned in 1919 that he actually began to develop the fossil". The work on this remarkable specimen, which was found to preserve dorsal armour and detailed skin impressions, took six years to complete. The new speciest was named *Scolosaurus cutleri*. Regarded at the time to be the finest armoured dinosaur known, the discovery and preparation of *Scolosaurus* received much press attention when it went on public display in 1925 (Figure 6). Parsons also received a glowing letter of commendation in November 1926 from the Museum that reads:

Dr Bather has called the attention of the Trustees to your laborious and skilled work in preparing the specimen of a large Armoured Dinosaur which was obtained by the late Mr. W.E. Cutler. I am very pleased to be in a position to inform you that the Trustees appreciate the value of your work on this fossil and realise that the interest of the specimen as now shown is largely due to the excellent work you have done in exposing the parts which have been preserved.

The fossil mammals that Louis Parsons prepared and mounted include the primitive camel *Stenomylus*, the early goat *Myotragus*, the rhinoceros *Diceratherium* (now called *Menoceras*), the sabre-toothed tiger *Smilodon* and the famous "Chatham elephant" (*Palaeoloxodon antiquus*), which

he excavated, prepared and designed the mount for. The recovery and preparation of this specimen was interrupted by his military service in France. When finally completed in 1926, it was the largest mounted fossil in the public gallery and attracted praise from King George V and King Alfonso XIII of Spain during a visit to the Museum, when Parsons was introduced to the latter.

Another testimony to Parsons's abilities was published by Clive Forster- Cooper (1880-1947), then Director of the Cambridge University Museum of Zoology and later (1938-1947) of the BM(NH). Referring to the work carried out on the skull of *Hyracotherium* (now *Pliolophus*) *vulpiceps,* Foster-Cooper (1932) wrote: "I am indebted to the keeper of Geology, Dr.Lang, for authorising the further development of this valuable and interesting specimen. The resources of modern instruments and the skill and care of Mr.Parsons have resulted in an almost perfect palate and lower jaw".

Clearly, Louis's skills and experience meant that he was in great demand on a wide range of significant projects, and he was also charged with the supervision of the unpacking and preparation of fossils collected by the Museum during the East African expeditions to Tendaguru (1924-1931).

Later in his career, while undertaking more analytical work, he became involved with the study of the infamous Piltdown skull and took samples from the teeth of the chimera specimen which he analysed in the laboratory, helping to establish that it was an elaborate fake. One year prior to his retirement in 1954, he was made a Member of the Order of the British Empire. In total he gave 46 years' service to the Museum (Maier, 2003:282).

Robert Parsons (Louis's son)was appointed as an assistant in the Department of Geology in 1945, became a Higher Scientific Officer in January 1973 and retired in 1990. A letter of 5 September 1944 confirmed that a grant of £75 was awarded for the employment of the young Parsons temporarily in the department.[9] He seems to have had a much less auspicious career than his father, and relatively little is recorded regarding his contribution, although he was a gifted replicator who specialized in creating moulds and casts of anthropological specimens. According to colleagues who remember him, he seems, unlike his father, to have been rather introverted, and preferred to go about his business quietly.[10] Robert Parsons was the last recorded member of these teams of father –and-son preparators (Figure 7).

CONCLUSIONS

The naming and development of palaeontology as a science came about in the mid- nineteenth century (Edwards, 1967). Fossil collecting by the Department of Geology the British Museum and subsequently the British Museum (Natural History) created a need for specimens to be expertly prepared for scientific study. In these early days, such expertise was provided by masons – men with practical skills initially derived from stone-masonry, and who expanded their knowledge to encompass an understanding of geology, fossils and specimen conservation, modelling, casting and mounting.

In trades and industries, sons often followed the same careers as their fathers, and so it was with the early fossil preparators . Long apprenticeships were served, with knowledge and skills being passed down the familial line, and frequently followed by 'jobs for life' in this specialism. Little detailed information was routinely recorded about the techniques and materials applied to individual specimens, for the processes were quite rudimentary, and useful substances for specimen treatment were limited. Not until the early part of the twentieth century, and with the advent of powered tools and experimentation into the use of industrial resins and chemicals, did written record of treatments begin to be established (Whybrow 1985). The first handbook to materials and techniques,published in 1976, was written by the Museum's retired preparator Arthur Rixon.Now obviously dated, it still remains an important reference source.

To this day, the route into a career as a fossil preparator relies upon the acquisition of disparate skills and knowledge, encompassing some combination of geology, anatomy, palaeontology, conservation, materials science and communications, together with experience of fieldwork. No single formal qualification can cover all these areas,and for most museum- or university- based preparators, jobs are scarce and invariably follow on from a period of unpaid voluntary work in a laboratory and/or fixed term periods of employment on specific projects, rather than the formal, paid apprenticeships of the past.

Yet the work of the fossil preparator, incorporating as it does many of the original techniques as well as embracing modern technology, such as Computerized Tomography (CT) and Three-dimensional (3D) surface scanning, continues to serve an important role in facilitating palaeontological research.

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NOTES

[1]URL (accessed 15 December 2017): http://www.nhm.ac.uk/about-us/history-and-architecture.html (Anonymous 201:History and architecture). See also Stern (1981).

[2]Natural History Museum Archives (hereafter NHM-A) DF106/10, Department of Palaeontology, Palaeontology Staff Files and Diaries, 1848-1967.

[3]W.Davies to H.Woodward, 7 September 1880: NHM-A-DF120/1,Department of Palaeontology, early Members of Staff, Correspondence and Papers, Davies, W: correspondence 1870-1890.

[4]Richard Hall (1839-1925), from Raglan, Monmouthshire: commencement of service date unknown, but worked as an assistant mason in the Department of Geology in 1885, and was appointed a mason in 1889: NHM-A DF106/13-17.NHM-A, PX169, Department of Palaeontology, Geology Section, Staff Files, fl 18809.

[5]F.O.Barlow to E.Hartert, 11 June 1908: NHM-A TRI/1/29/40, Tring Museum Correspondence.

[6]NHM-A, 1914 War Archive, and third supplementary list, January 1917.

[7]NHM-A DF150/5, Department of Palaeontology, Geology Section: Correspondence and Papers 1940-1996, Barlow, Frank Oswell, short obituary, mid 20th century.

[8]"Brief outline of the services of Louis E.Parsons": NHM-A TCC-DOC-1734c.

[9]Hon.Treasurer, Godman E. Fund to W.N. Edwards, 5 September 1944: NHM-A TCC-DOC-0018

[10]A.Milner and J.Hooker, pers.comm., 10 April 2018

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LIST OF FIGURE CAPTIONS

Figure 1. Timeline of key staff employed in the Palaeontology Workshop (later known as the Palaeontology Laboratory, Palaeontology Conservation Unit and currently The Conservation Centre) from 1843 to the present compiled from disparate Natural History Museum Archives.

Figure 2. William Davies (Natural History Museum Archives DF33/12, Mineralogy Department Photograph Collection, 1870-1980).

Figure 3. Thomas Davies (Natural History Museum Archives DF33/12, Mineralogy Department Photograph Collection, 1870-1980).

Figure 4. Geological Department Junior Staff photograph 19 November 1900, including Caleb Barlow (front row, second from right), Frank Barlow (back row, second from left) and Richard Hall (back row,centre)(Natural History Museum Archives PH/2/5/1/8, Staff Portraits and Group Photographs 19th-21st Century).

Figure 5. Reconstructed dorsal shield of *Polacanthu*s (Hulke 1887, plates 8 and 9) in dorsal (left) and ventral (right) views.

Figure 6. Louis Parsons working on *Scolosaurus: Illustrated London News*, 16 February 1924, p.263 (Natural History Museum Archives TCC-ARC-1734a).

Figure 7. Robert Parsons and his father Louis Parsons working together on the cast of *Paracylotosaurus (*Natural History Museum Archives PH/2/5/4/7, Photograph Collection, Staff Portraits and Group photographs, R. J. Parsons and L. E. Parsons preparing fossils, 1947).